Expected hydrologic observations and data sharing capabilities for the Surface Water and Ocean Topography (SWOT) Mission

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Physical Oceanography Distributed Active Archive Center (PO. DAAC)

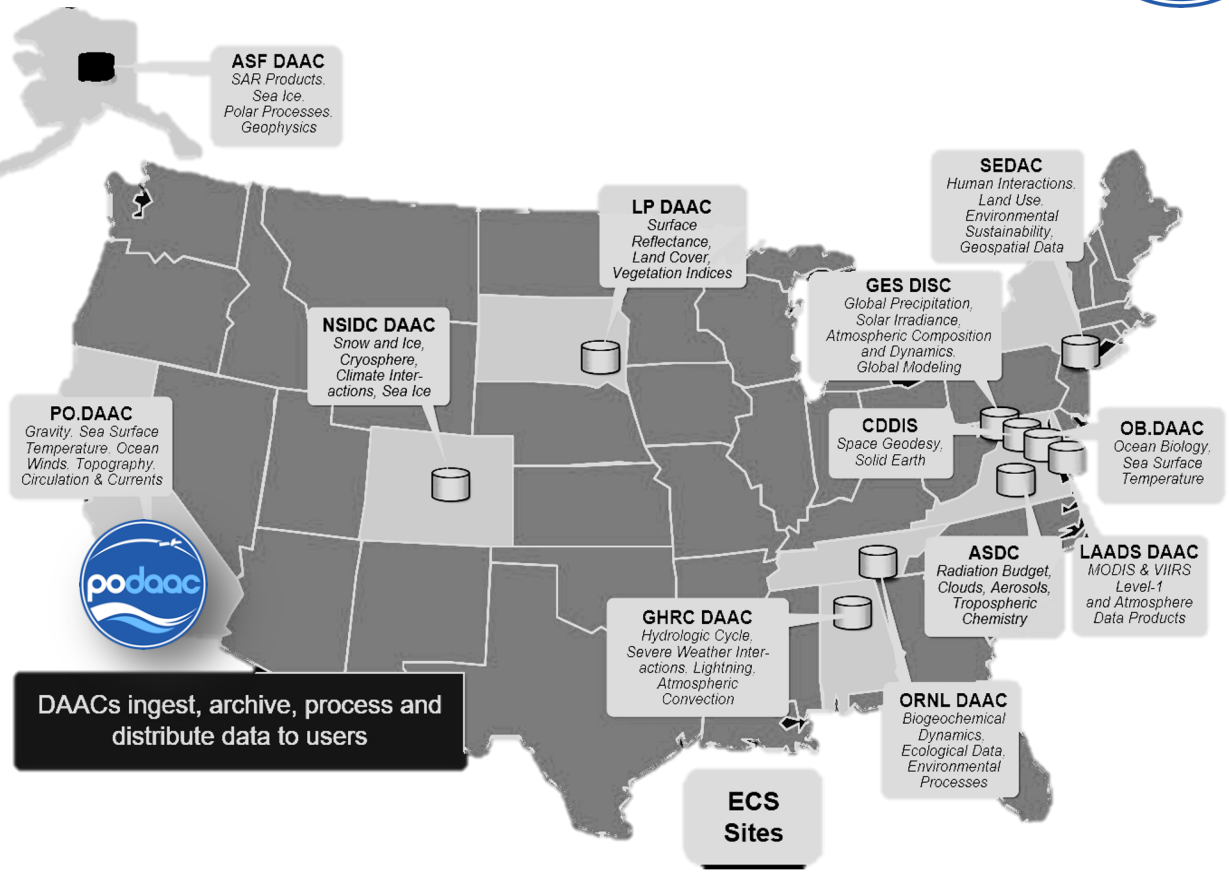
https://podaac.jpl.nasa.gov/

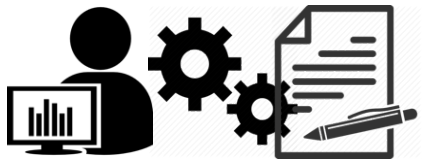
EOSDIS
NASA'S EARTH OBSERVING SYSTEM DATA & INFORMATION SYSTEM

Process

Archive

Distribute





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PO.DAAC Datasets

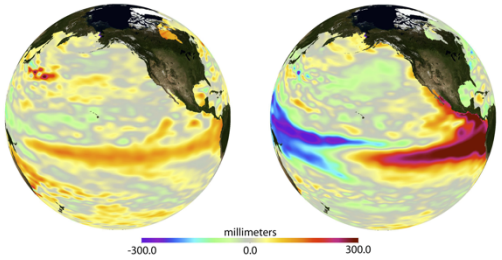
NASA Missions & Projects

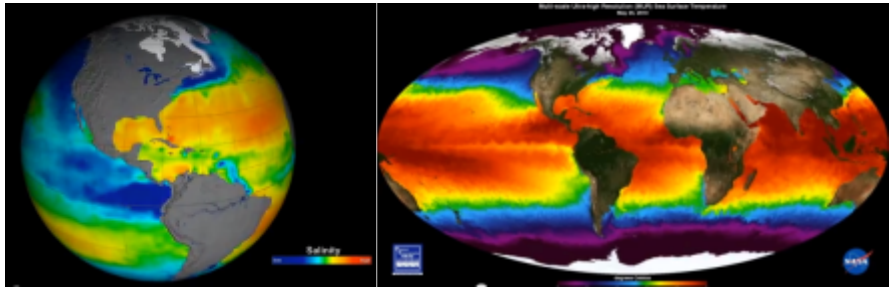
Seasat, TOPEX/Poseidon, Jason-1, NSCAT,
SeaWinds on ADEOS-II, QuikSCAT, GRACE, GHRSST,
MEaSUREs, Aquarius, SPURS,
ISS-RapidScat, AirSWOT, OMG, CYGNSS, GRACE-FO,
Jason-CS (2020), SWOT (2021)

Ocean & Climate Community Driven

Value-added datasets in support of NASA programs

Gravity
Ocean Circulation & Currents
Ocean Surface Salinity
Ocean Surface Topography
Ocean Vector Winds
Sea Surface Temperature
Hydrology
Ocean Color
Sea Ice





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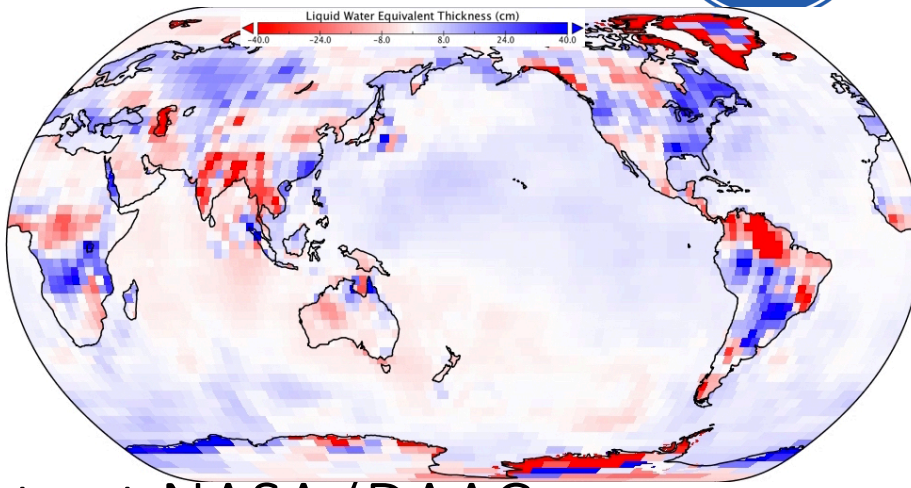
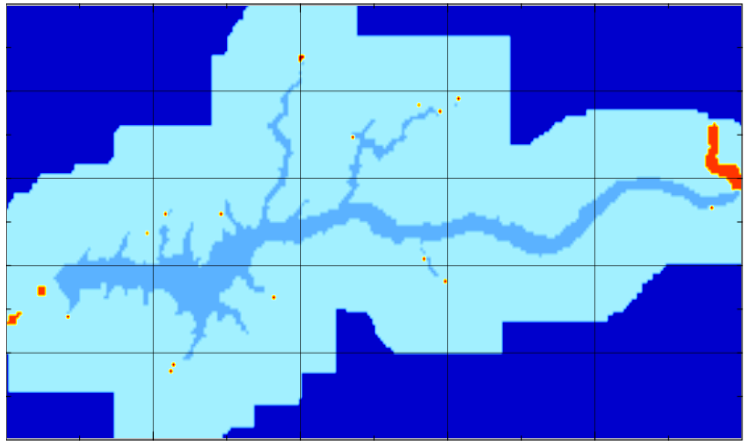
Hydrology Datasets

- Current hydrology datasets at PO.DAAC:
  - GRACE mascon 0.5° grid of equivalent water height
  - GRRATS river height time series from altimetric satellite
  - Pre-SWOT hydrology lake area extent
  - Pre-SWOT hydrology height (GREALM) time series



- To look at the full span of existing hydrology datasets at NASA (DAACs other than PO.DAAC, e.g., GES DISC) check out Earth Data Search Client (https://search.earthdata.nasa.gov/)
  - GPM – Global Precipitation Mission
  - SMAP – Soil Moisture Active Passive
  - TRMM – Tropical Rainfall Measuring Mission



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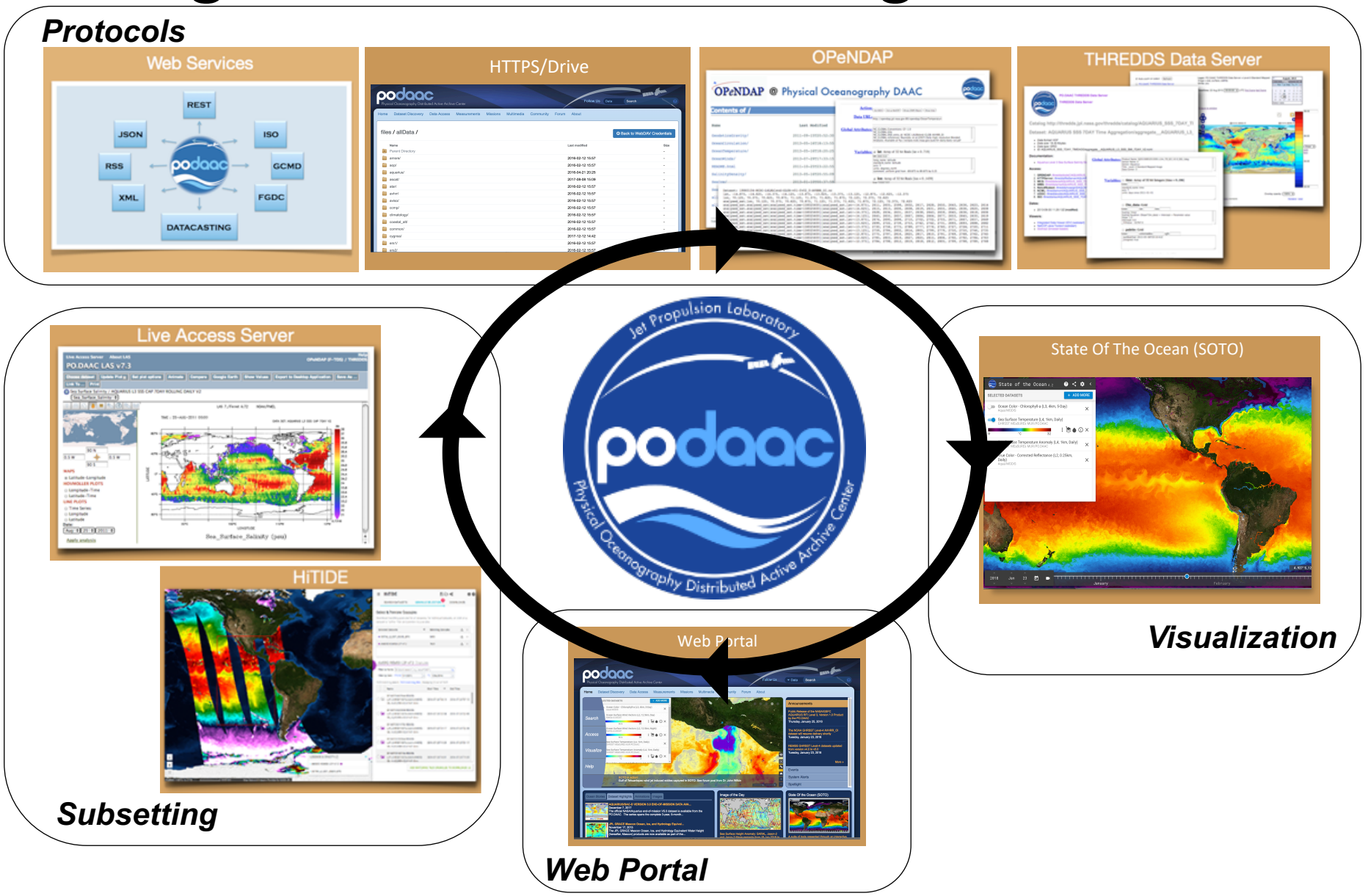
Existing Services - Connecting Users to Data



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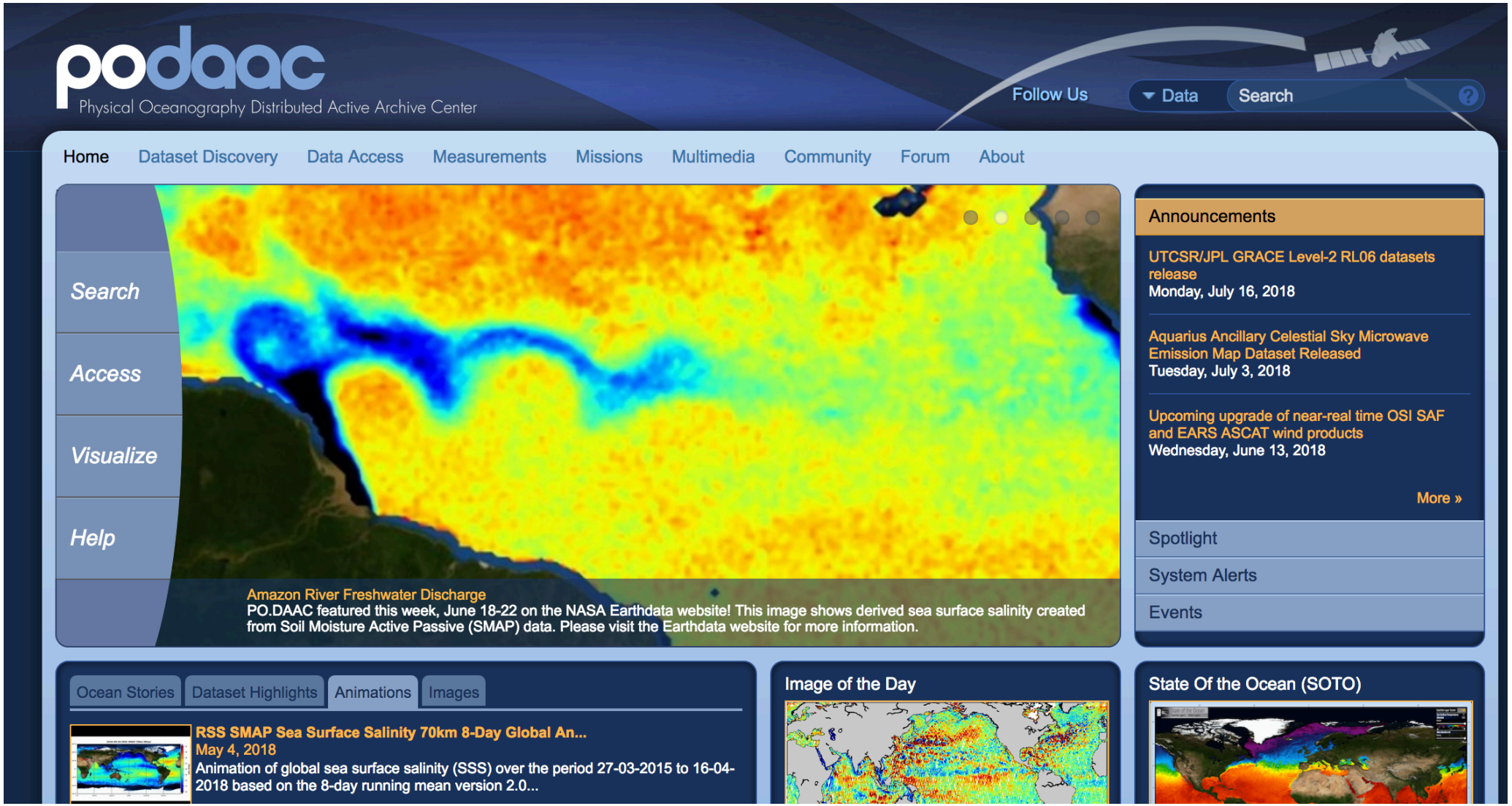
Web Portal

https://podaac.jpl.nasa.gov/



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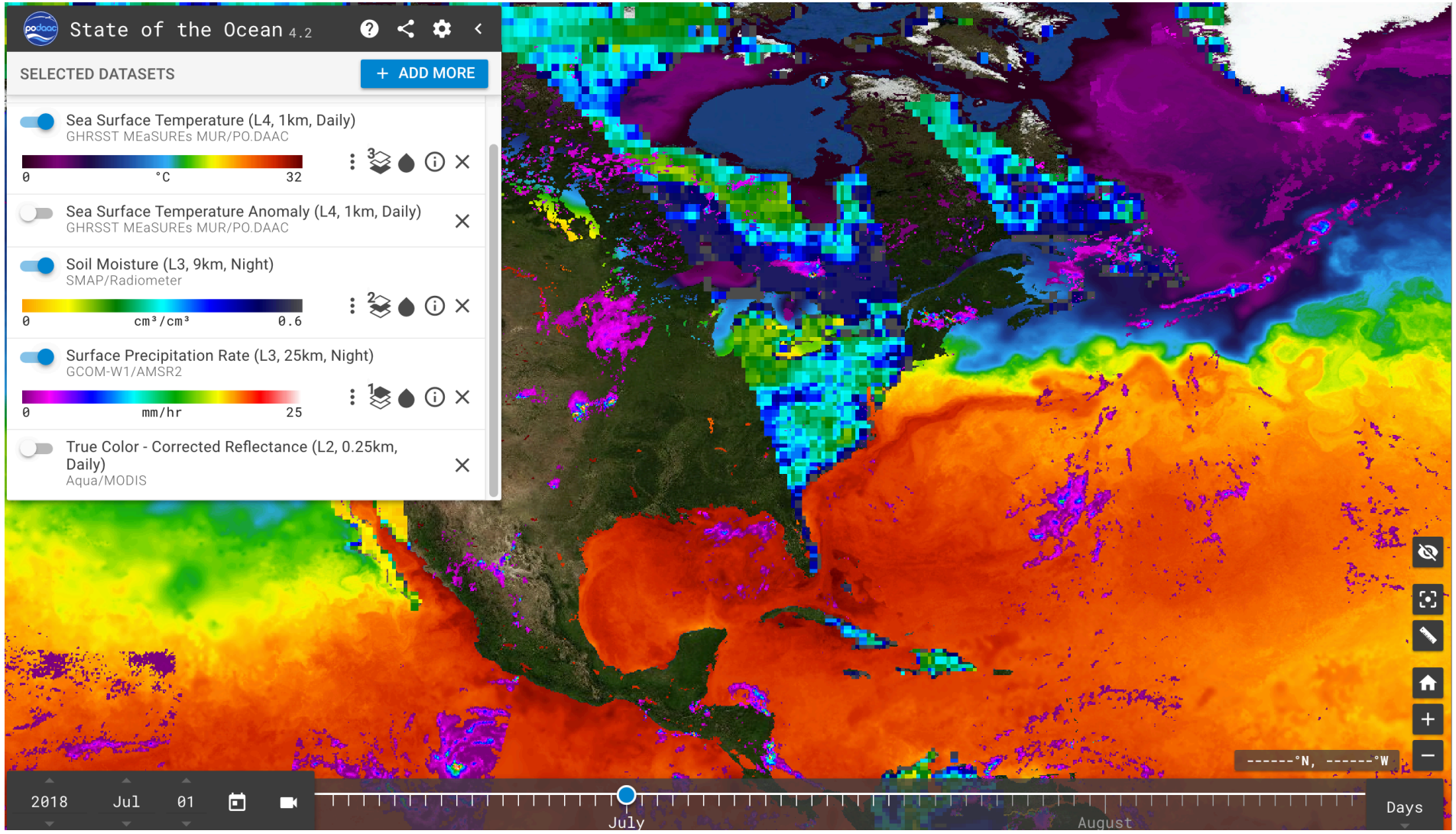
Visualization

https://podaac-tools.jpl.nasa.gov/soto/



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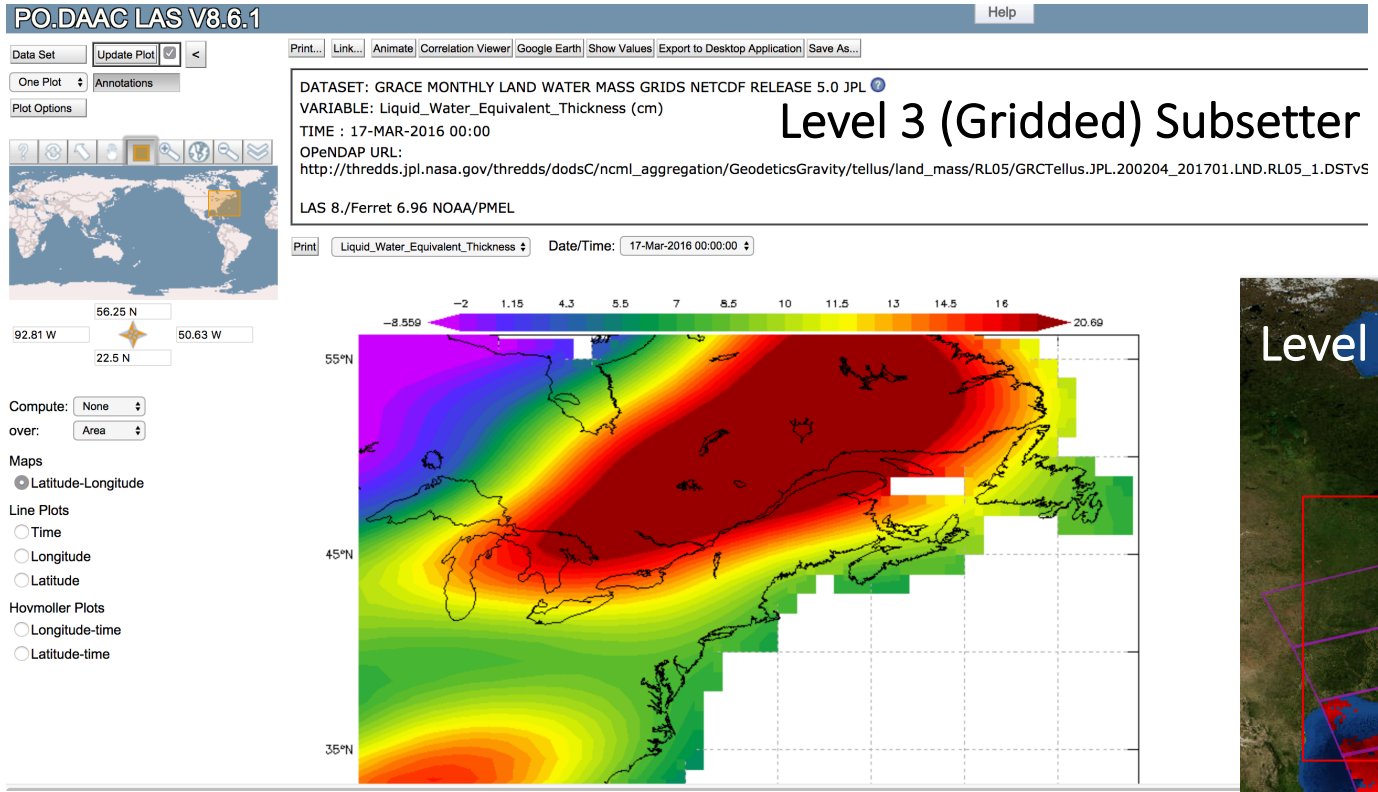
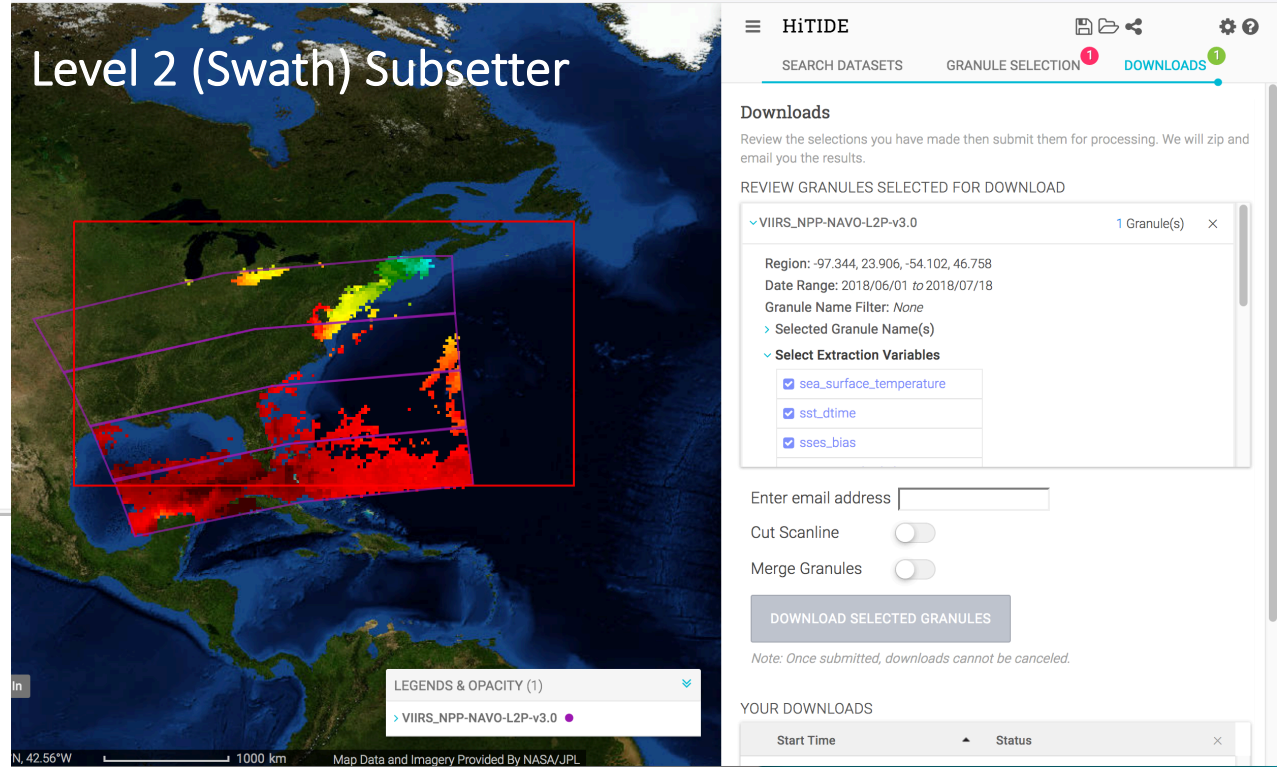
Subsetting



Level 3 (Gridded) Subsetter

https://podaac-tools.jpl.nasa.gov/las/



https://podaac-tools.jpl.nasa.gov/hitide/

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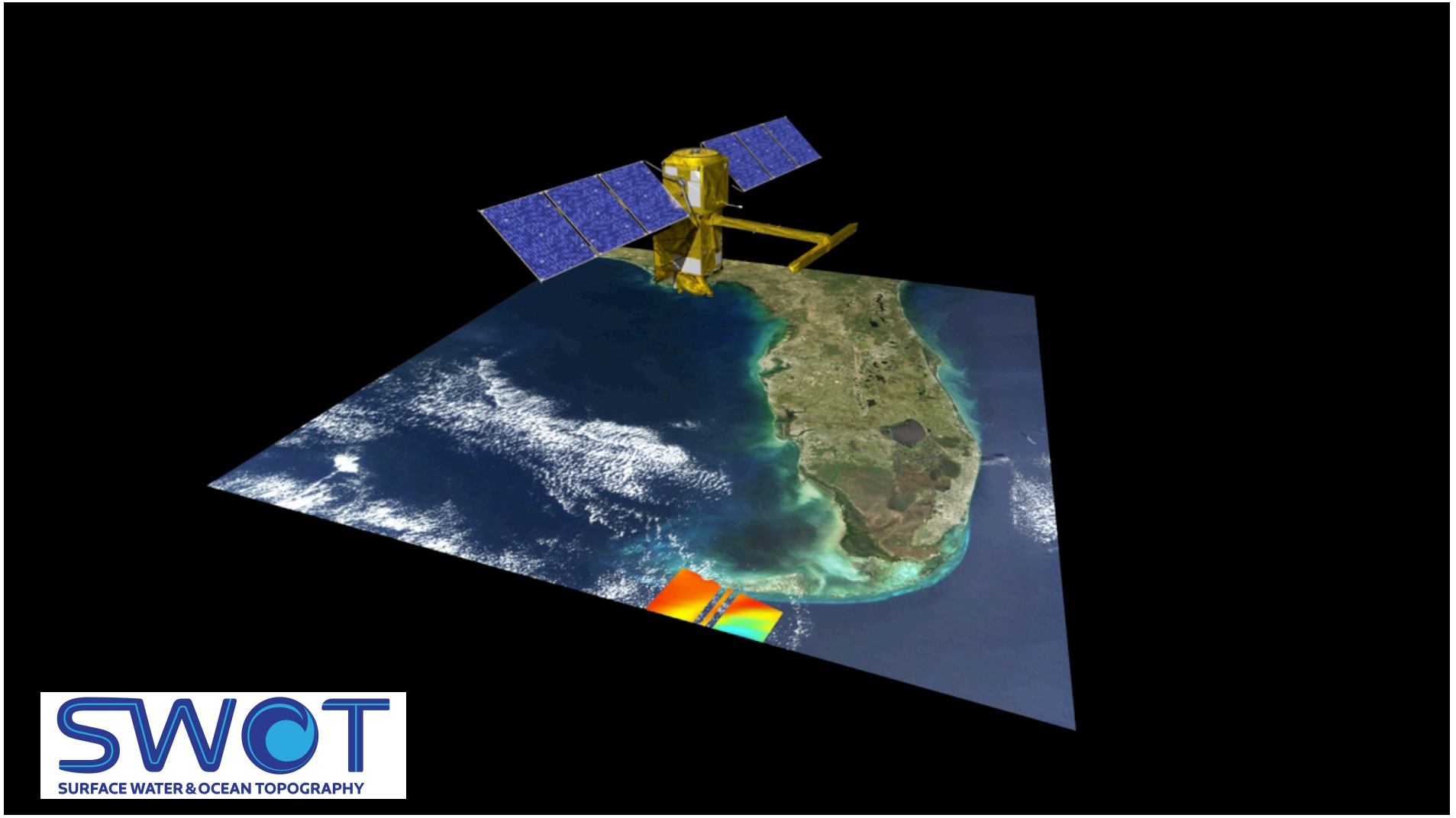
Future – SWOT and the Big Data Paradigm



SWOT will produce 20 TB of data daily

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PO.DAAC – Plans for SWOT search and discovery

- SWOT will be fully hosted on NASA Amazon Web Services infrastructure
  - Support existing ‘download and analyze’ data access patterns
  - Introduce ‘Login and analyze’ data access patterns
- Volume and File issues
  - Build search and access services to remove barriers for users
- Interdisciplinary Data Connections

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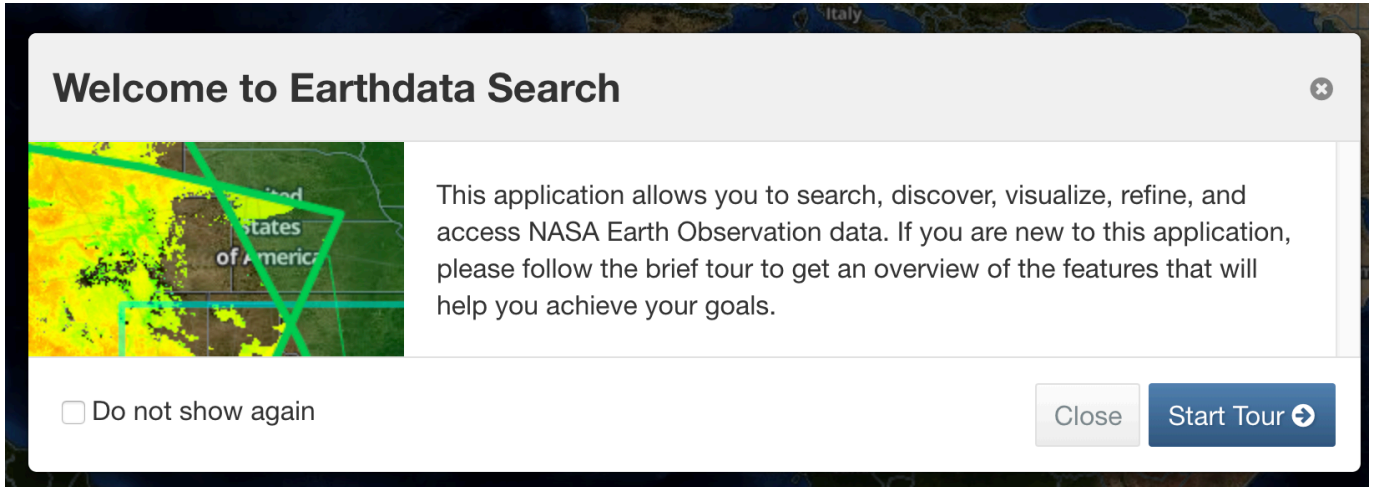
PO.DAAC – Plans for SWOT search and discovery

Search and Discovery

- PO.DAAC SWOT Mission Portal
- Earthdata Search Client
- Subsetting – Time, Space, Feature ID
- Download/Aggregate/Extract into community formats



Support for SWOT

- Integrate data into existing hydrology tools such as Hydroclient & Hydroshare
- Citation and DOI for data products
- Water Stories – publicize related research using PO.DAAC data
- PO.DAAC Engagement Plan (i.e., Cloud User Handbook, recipes, hands-on tutorials, and webinars)

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Discussion

Data

- What other data, in combination with SWOT, would you need for your research?

Services

- What types of services are you 1) accustomed to and 2) would expect to work with SWOT and related data (e.g., GIS)?

Analysis

- Do you think you will need to use the cloud for on-demand analysis?
  - If yes, then what types of analytics within the cloud environment would you be interested in?

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PO.DAAC podaac.jpl.nasa.gov

PO.DAAC forum podaac.jpl.nasa.gov/forum

SWOT survey tinyurl.com/swotsurvey2

SWOT mission page swot.jpl.nasa.gov

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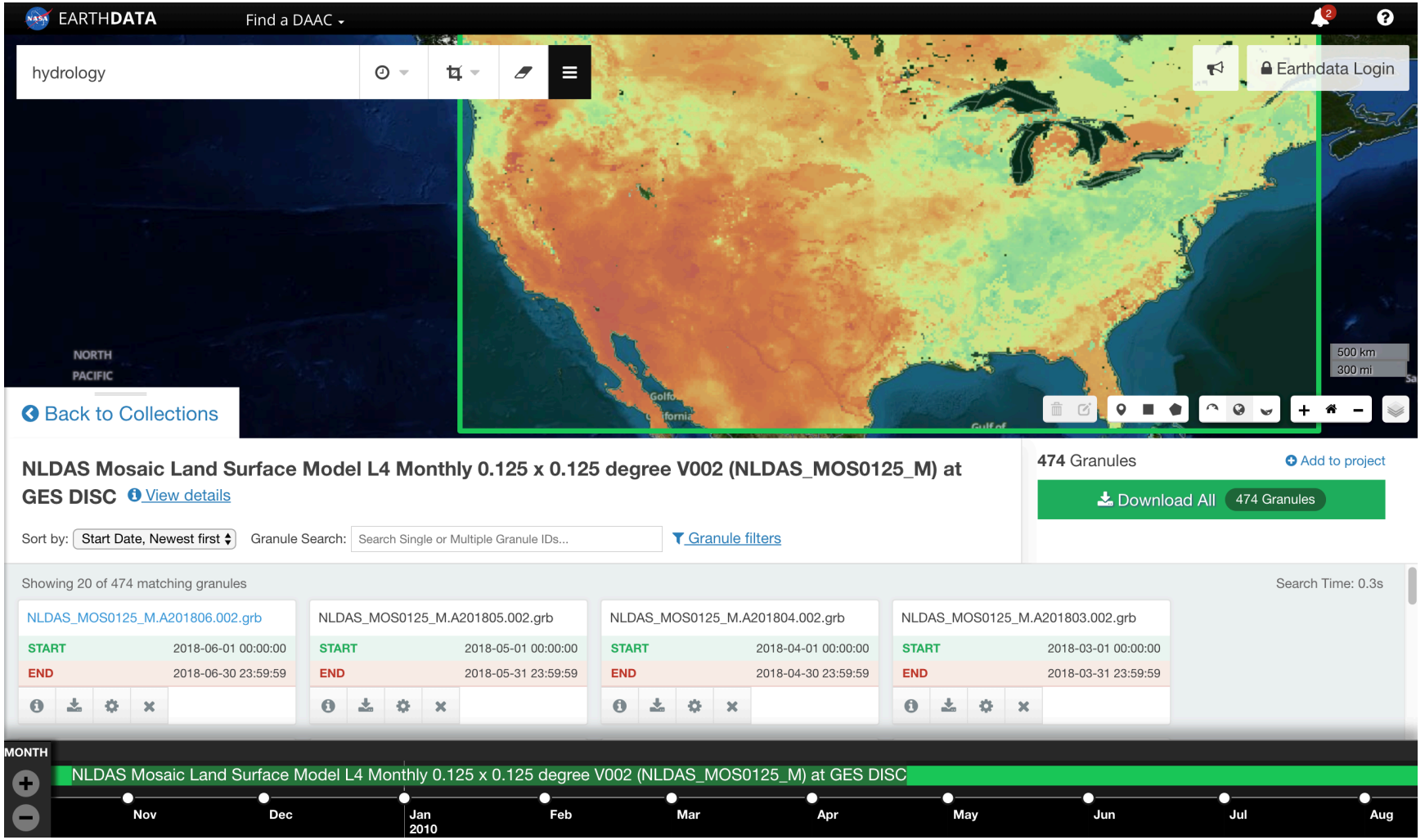
Backup



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Backup

- Earthdata Login
  - Allows us to gather metrics on product use- a great benefit for data providers and producers
  - Allows us to better tailor and recommend products
  - Be notified when data becomes available for a given search criteria
  - Historical record allows you to see what data and what processing you applied to products
  - We can let you know when newer versions of data you've used become available

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